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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shinji Kishimoto

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EXAMINER

GUPTA, VANI

ART UNIT

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3777

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,471	Applicant(s) KISHIMOTO, SHINJI	
	Examiner VANI GUPTA	Art Unit 3777	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6,8,12 and 16-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6,8,12 and 16-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/24/10;8/26/10;12/10/10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 8, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuteru (JP 2154745) in view of Yoichi (JP 5000138).

Regarding Claim 1, Kazuteru suggests an ultrasonic diagnostic apparatus comprising:

a probe (10) that transmits/receives ultrasonic waves to/from a test subject;

a transmitting section (40) that supplies a drive signal (120) to the probe;

a receiving section (20) that receives a reflection echo signal (101) outputted from the probe;

an image constructing section (31) that reconstructs a diagnostic image on the basis of the received reflection echo signal;

a display section (32) that displays the diagnostic image constructed by the image constructing section; and

a control section (10) that controls these sections (p. 10), wherein the ultrasonic diagnostic apparatus includes a judging section (60) configured to judge, on the basis of the diagnostic image information, which is reconstructed from the image constructing section when the probe transmits/receives ultrasonic waves that the probe is left in the air (p. 11, paragraph 2; and p. 13, last paragraph – p. 14, first paragraph). That is to say, the higher intensity echoes

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from when the probe is in the air may produce an “image” or frame that is different than that produced by the lower intensity echoes from when the probe is placed on a subject, as is would be known by one of ordinary skill in the art.

However, Kazuteru does not teach that when the judging unit judges that the probe is left in the air, the control section controls the drive signals supplied to the probe from the transmitting section so as to reduce the frame rate to a value that is lower than the present frame rate but in a range sufficient for moving image reproduction of the diagnostic image..

Nonetheless, Yoichi teaches that when a probe is determined to be “neglected in the air,” (paragraph [0007]) it is more appropriate to “control wave transmission” or slow or reduce the frame rate to “1 time frame per 100 frames” (paragraphs [0012 – 0014]).

Accordingly, it would have been obvious to one of ordinary skill in the art, having the teachings of Kazuteru and Yoichi before one at the time the invention was made, to modify the ultrasonic diagnostic imaging system with idle probe judging unit teachings of Kazuteru with the reducing frame of a neglected in the air probe teachings of Yoichi so that one could control the generation of heat of the ultrasonic probe (Yoichi: paragraph [0016]).

Regarding Claim 2, Kazuteru suggests the ultrasonic diagnostic apparatus of claim 1, wherein the judging section includes at least one of a B image judging unit that judges on the basis of a B image (p. 15, paragraph 3), a Doppler signal judging unit that judges on the basis of a Doppler signal (“*D-mode*,” p. 15, paragraph 3), and a CFM judging unit that judges on the basis of a CFM image (“*M-mode*,” p. 15, paragraph 3).

Regarding Claim 6, it would be obvious to one skill in the art that Kazuteru would provide the ultrasonic diagnostic apparatus of claim 2, further comprising switching means that

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switches between the B image judging unit, the Doppler signal judging unit, and the CFM judging unit since Kazuteru provides means for all three types of imaging; and also wherein the switching means switches at desired time intervals since Kazuteru suggests it is important that when using the different types of imaging modes, one must consider different positions and scanning lines for the probe (p. 14, paragraph 3 - p. 25, paragraph 1).

Regarding Claim 8, Kazuteru in view of Yoichi suggests the ultrasonic diagnostic apparatus of claim 1, wherein when the control section judges that the probe is left in the air, the control section stops the drive signal supplied to the probe from the transmitting section (Kazuteru: p. 14, first paragraph) or reduces the energy of the drive signal to be equal to or less than a set value (Yoichi: see rejection of Claim 1).

Regarding Claim 12, Kazuteru suggests the ultrasonic diagnostic apparatus of claim 8, wherein the control section returns the energy of the drive signal supplied to the probe from the transmitting section, or the frame rate, to its original status on the basis of a command from an operation section, and transmits the ultrasonic waves to the test subject from the probe (p. 16, paragraph 3).

2. Claims 16 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuteru in view of Yoichi as applied to claim 8 respectively above, and further in view of Burke et al. (US 5,517,994).

Regarding Claim 16, Kazuteru in view of Yoichi teaches each and every limitation of the claim, as discussed above in reference to claim 8.

However, Kazuteru in view of Yoichi does not teach the control section that generates a message representing the period of time until the energy of the drive signal supplied to the probe

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from the transmitting section is reduced to be equal to or less than the set value (see rejection of Claim 1), and displays the generated message on the display section.

Nonetheless, Burke et al. (hereinafter Burke) teaches an ultrasonic diagnostic apparatus that is capable of displaying status messages about its overall performance and the performance of its components (col. 7, lines 25 - 40).

Accordingly, it would have been obvious to one of ordinary skill in the art, having the teachings of Kazuteru and Yoichi and Burke before one at the time the invention was made, to modify the aforementioned teachings of Kazuteru in view of Yoichi with ultrasonic diagnostic imaging self-testing status display teachings of Burke so that one could obtain a “full context” of the status or condition of the probe when in idle.

Regarding claims 17 and 18, Applicant should note that the specific features or attributes of the messages themselves and what they represent do not limit the structure of the present application in such a way that it is novel over the prior art. That is, that as the claim is currently written, these features falls under non-functional descriptive material, or non functional printed matter. Since descriptive material does not make the apparatus a different apparatus, as the apparatus would differ only by what is being displayed on the display unit, the present features do not further limit the apparatus as claimed. Furthermore, they are not limiting in such a way that Burke's apparatus is not structurally and functionally incapable of generating the messages. Furthermore, Burke is not limited in any way in reference to the display size, the display color, or other display aspects of the message that may change over time.

3. Claims 19 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuteru in view of Yoichi in view of Aloka reference (JP 05-253225).

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Regarding claims 19 – 24, Kazuteru in view of Yoichi suggests an ultrasonic diagnostic apparatus comprising: a probe that transmits/receives ultrasonic waves to/from a test subject; a transmitting section that supplies a drive signal to the probe; a receiving section that receives a reflection echo signal outputted from the probe; an image constructing section that reconstructs a diagnostic image on the basis of the received reflection echo signal; a display section that displays the diagnostic image constructed by the image constructing section; and a control section that controls these sections wherein the ultrasonic diagnostic apparatus includes a judging section configured to judge, on the basis of image information which is reconstructed from the image constructing section when the probe transmits/receives ultrasonic waves, that the probe is left in the air, and when the judging unit judges that the probe is left in the air, the control section suppresses the quantity of the drive signals supplied to the probe from the transmitting section, and the control section reduces the frame rate to a value that is lower than the present frame rate but in a range sufficient for moving image reproduction of the diagnostic image (see rejection of Claim 1).

However, Kazuteru in view of Yoichi differs from claims 19 – 24 in that Kazuteru in view of Yoichi does not specifically do the judging based on brightness image information, or Doppler image information, or CFM image information.

Nonetheless, Aloka reference (hereinafter Aloka) suggests judging image information by comparing a “reference value based on a reference area (region of interest) displayed on a screen, and the image data in the reference area is extracted. A predetermined reference value is computed based on the extracted image data (paragraphs [0009 – 0010]). Reference value analysis of image data may be based on pixel-by-pixel (or coordinate level) level (paragraphs

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[0016 - 0017])). Judging is then based on comparing the actual values to the predetermined reference value (or threshold) (paragraphs [0018 – 0024]).

It would be within the ordinary skill of art to apply this method to any type of image, including a brightness image, Doppler image, or CFM image.

Accordingly, it would have been obvious to one of ordinary skill in the art, having the teachings of Kazuteru and Yoichi and Aloka before one at the time the invention was made, to modify the ultrasonic diagnostic imaging system with idle probe judging unit teachings of Kazuteru and Yoichi with the pixel-by-pixel reference value threshold based judging teachings of Aloka so that one could better judge “disuse of the probe” for varying types of images.

Response to Arguments

4. Applicant's arguments with respect to claims 1, 2, 6, 8, 12, and 16 – 24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VANI GUPTA whose telephone number is (571)270-5042. The examiner can normally be reached on Monday - Thursday (8:30 am - 6:00 pm; EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert (Tse) Chen can be reached on 571-272-3672. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. G./

Examiner, Art Unit 3777

/Tse Chen/

Supervisory Patent Examiner, Art Unit 3777